

Title (en)

Ink jet printing head, ink jet head cartridge and printing apparatus

Title (de)

Tintenstrahldruckkopf, Tintenstrahlkopf-Kartusche und Druckgerät

Title (fr)

Tête d'impression à jet d'encre, cartouche de tête à jet d'encre et appareil d'impression

Publication

**EP 0613781 B1 19970502 (EN)**

Application

**EP 94102902 A 19940225**

Priority

JP 3839493 A 19930226

Abstract (en)

[origin: EP0613781A1] An ink jet printing head (40) for effecting printing by ejection of ink includes a first electrothermal transducer (16,17) having a heat generating resistor (16) with a first area and wiring (17) electrically connected with the heat generating resistor; a second electrothermal transducer (12,13;14,15) having a second heat generating resistor (12;14) with an area which is different from the area of the first heat generating resistor (16); wherein bubbles are produced in ink materials upon application of electric signals to the electrothermal transducers, by which different volumes of ink materials are ejected; wherein the first and second electrothermal transducers have substantially the same bubble production threshold voltage. <IMAGE>

IPC 1-7

**B41J 2/205**; **B41J 2/05**

IPC 8 full level

**B41J 2/14** (2006.01); **B41J 2/21** (2006.01)

CPC (source: EP US)

**B41J 2/14056** (2013.01 - EP US); **B41J 2/14129** (2013.01 - EP US); **B41J 2/2128** (2013.01 - EP US); **B41J 2002/14379** (2013.01 - EP US)

Cited by

US6062680A; US6022098A; EP0803361A3; US6241333B1; AU773457B2; US6234612B1; EP0867285A3; EP0707964A3; US5754201A; EP0707963A3; US5731828A; US5880762A; US6634736B2; EP0764532A3; CN1081544C; US6227640B1; US6137502A; EP0758585A3; US6290335B1; US6439690B2; WO0115904A1; KR100661260B1

Designated contracting state (EPC)

AT BE CH DE DK ES FR GB GR IE IT LI LU NL PT SE

DOCDB simple family (publication)

**EP 0613781 A1 19940907**; **EP 0613781 B1 19970502**; AT E152399 T1 19970515; DE 69402901 D1 19970605; DE 69402901 T2 19971120; US 6412920 B1 20020702

DOCDB simple family (application)

**EP 94102902 A 19940225**; AT 94102902 T 19940225; DE 69402901 T 19940225; US 74103996 A 19961030